

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of TERASHIMA, et al.
Serial No. Not Yet Assigned
Filing Date Herewith
Title SEMICONDUCTOR DEVICE AND METHOD TO PRODUCE
 THE SAME

PRELIMINARY AMENDMENT

Please amend the above-identified application as follows:

In the claims:

Please cancel claims 4-5, 7-9, 11, 13-15, and 20-21 without prejudice.

Please add the following new claims:

22. (New) A semiconductor device according to claim 1 characterized in that the bonding material and the reinforcing material consist of different materials.
23. (New) A semiconductor device according to claim 3 characterized in that the bonding material and the reinforcing material consist of different materials.
24. (New) A semiconductor device according to claim 1 characterized in that the reinforcing material consists of a metal and/or an inorganic material and the reinforcement covers the wire or a joint bulb with any of the metal coating and the inorganic material coating.
25. (New) A semiconductor device according to claim 3 characterized in that the reinforcing material consists of a metal and/or an inorganic material and the reinforcement covers the wire or a joint bulb with any of the metal coating and the inorganic material coating.
26. (New) A semiconductor device according to claim 1 characterized by forming, at the interface between the metal coating and the metal surface of the bonding wire, a diffusion layer of the two metals.
27. (New) A semiconductor device according to claim 3 characterized by forming, at the interface between the metal coating and the metal surface of the bonding wire, a diffusion layer of the two metals.
28. (New) A semiconductor device according to claim 1 characterized in that the bonding wire consists of any one of gold, copper, aluminum, silver and an alloy of any of these metals.
29. (New) A semiconductor device according to claim 3 characterized in that the bonding wire consists of any one of gold, copper, aluminum, silver and an alloy of any of these metals.

30. (New) A semiconductor device according to claim 1 characterized in that the concentration of gold at the outermost surface of a bonding wire consisting of gold or a gold alloy is 99% or less.
31. (New) A semiconductor device according to claim 3 characterized in that the concentration of gold at the outermost surface of a bonding wire consisting of gold or a gold alloy is 99% or less.
32. (New) A semiconductor device according to claim 1 characterized by coating the area covering the semiconductor, the bonding wires, the connecting terminals and the joint bulbs with resin.
33. (New) A semiconductor device according to claim 3 characterized by coating the area covering the semiconductor, the bonding wires, the connecting terminals and the joint bulbs with resin.
34. (New) A semiconductor device according to claim 1 characterized by forming the connecting terminal using a substrate, a lead frame or a TAB tape.
35. (New) A semiconductor device according to claim 3 characterized by forming the connecting terminal using a substrate, a lead frame or a TAB tape.
36. (New) A semiconductor device according to claim 1 characterized by forming the semiconductor terminal on any one of a semiconductor chip, the substrate, the lead frame or the TAB tape.
37. (New) A semiconductor device according to claim 3 characterized by forming the semiconductor terminal on any one of a semiconductor chip, the substrate, the lead frame or the TAB tape.
38. (New) A semiconductor device according to claim 1 characterized in that the surface of the semiconductor terminal consists of copper, aluminum, nickel, cobalt, gold, silver and an alloy of any of these metals.
39. (New) A semiconductor device according to claim 3 characterized in that the surface of the semiconductor terminal consists of copper, aluminum, nickel, cobalt, gold, silver and an alloy of any of these metals.
40. (New) A method to produce a semiconductor device according to claim 18 characterized by coating the bonding wire, either partially or wholly, by electrolytic or electroless plating of metal in the process to reinforce the bonding wire.
41. (New) A method to produce a semiconductor device according to claim 19 characterized by coating the bonding wire, either partially or wholly, by electrolytic or electroless plating of metal in the process to reinforce the bonding wire.
42. (New) A method to produce a semiconductor device using a bonding wire for linking a semiconductor terminal to a connecting terminal for an outside circuit, according to claim 16, characterized by including a process to subject the bonding wire to a heat treatment at a temperature of 50°C or higher after the process to reinforce the wire by the metal coating.

43. (New) A method to produce a semiconductor device using a bonding wire for linking a semiconductor terminal to a connecting terminal for an outside circuit, according to claim 17, characterized by including a process to subject the bonding wire to a heat treatment at a temperature of 50°C or higher after the process to reinforce the wire by the metal coating.
44. (New) A method to produce a semiconductor device using a bonding wire for linking a semiconductor terminal to a connecting terminal for an outside circuit, according to claim 18, characterized by including a process to subject the bonding wire to a heat treatment at a temperature of 50°C or higher after the process to reinforce the wire by the metal coating.
45. (New) A method to produce a semiconductor device using a bonding wire for linking a semiconductor terminal to a connecting terminal for an outside circuit, according to claim 19, characterized by including a process to subject the bonding wire to a heat treatment at a temperature of 50°C or higher after the process to reinforce the wire by the metal coating.

REMARKS

This Preliminary Amendment is being submitted in order to eliminate multiple dependencies.

It is respectfully submitted that the subject matter of the present application is new, non-obvious, and useful. Prompt consideration and allowance of the application are respectfully requested.

Respectfully submitted,

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